Euphonix is AVID™

ML530

Mic-Line Interface

Installation Manual

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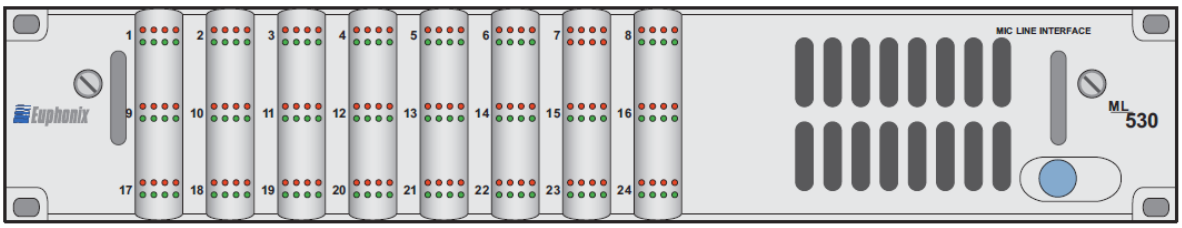

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Regulatory and Safety Notices

Warnings and Cautions

Never install equipment if it appears damaged.

Disconnect the power cord before servicing unit.

Only perform the services explicitly described in this document. For services or procedures not outlined in this document, speak with authorized Avid service personnel.

Follow all warnings and cautions in the procedures.

Operate the device within its marked electrical ratings and product usage instructions.

If you need to replace a battery in an Avid hardware unit, be sure to use the correct battery type. There might be a risk of explosion if a battery is replaced by an incorrect type. Dispose of used batteries according to the manufacturer's instructions.

FCC Notice

Part 15 of the Federal Communication Commission Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference free radio frequency spectrum. Many electronic devices produce RF energy incidental to their intended purpose.

These rules place electronic equipment into two classes, A and B, depending on the intended use.

Class A devices are those that may be expected to be installed in a business or commercial environment. Class B devices are those that may be expected to be installed in a home or residential environment. The FCC requires devices in both classes to be labeled with the interference likelihood and additional operating instructions. The rating label on the equipment will show which class the product is (A or B). Class A product will not have an FCC logo. Class B equipment will have an FCC logo. The information statements differ on the two classes.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Modifications

The FCC requires the user to be notified that any changes or modifications made to Avid hardware that are not expressly approved by Avid Technology may void the user's authority to operate the equipment.

Cables

Connections to Avid hardware must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

PRODUCTS WITH MULTIPLE POWER INPUTS:

WARNING: Each power input is intended to be connected to a separate branch circuit. Risk of high leakage exists if multiple inputs are connected to a single source and protective earth is not present. A QUALIFIED SERVICE PERSON shall verify that each socket-outlet from which the equipment is to be powered provides a connection to the building protective earth. If any do not provide this connection, the QUALIFIED SERVICE PERSON shall arrange for the installation of a PROTECTIVE EARTHING CONDUCTOR from the separate protective earthing terminal to the protective earth wire in the building.

Canadian ICES-003

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecté toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union Declaration of Conformity

CE

Declaration of conformity

Konformitätserklärung

Déclaration de conformité

Declaración de Confomidad

Verklaring de overeenstemming

Dichiarazione di conformità

We/Wir/ Nous/WIJ/Noi:

Avid Technology

1925 Andover Street

Tewksbury, MA, 01876 USA

European Contact: Nearest Avid Sales and Service Office or

Avid Technology International B.V.

Sandyford Industrial Estate

Unit 38, Carmanhall Road

Dublin 18, Ireland

declare under our sole responsibility that the product,

erklären, in alleniniger Verantwortung,daß dieses Produkt,

déclarons sous notre seule responsabilité que le produit,

declaramos, bajo nuestra sola responsabilidad, que el producto,

verklaren onder onze verantwoordelijkheid, dat het product,

dichiariamo sotto nostra unica responsabilità, che il prodotto,

Product Name(s) : Mic-Line Interface

Model Number(s): ML530

Product Options: This declaration covers all options for the above product(s).

to which this declaration relates is in conformity with the following standard(s) or other normative documents.

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder Richtlinie(n) übereinstimmt.

auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).

al que se refiere esta declaración es conforme a la(s) norma(s) u otro(s) documento(s) normativo(s).

waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.

a cui si riferisce questa dichiarazione è conforme alla/e seguente/i norma/o documento/i normativo/i.

The requirements of the European Council:

Safety: Directive 2006/95/EC

EN 60065:2002 /A1:2006

EMC: Directive 2004/108/EC

EN 55103-1:1996

EN 55103-2:1996

LED Safety Notices

Avid hardware might contain LED or Laser devices for communication use. These devices are compliant with the requirements for Class 1 LED and Laser Products and are safe in the intended use. In normal operation the output of these laser devices does not exceed the exposure limit of the eye and cannot cause harm.

Standard to which conformity is declared: (IEC 60825-1)

Optical connections are located on the rear panel and are typically labeled “Optical” or “SPDIF/ADAT.” The exact location of optical connections is identified more clearly elsewhere in the documentation for the Avid hardware device.

Use of controls and/or adjustments or the performance of procedures other than those specified herein and elsewhere in documentation for the Avid hardware might result in hazardous radiation exposure.

Disposal of Waste Equipment by Users in the European Union

This symbol on the product or its packaging indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

Rack-mount Requirements

The following rack-mount requirements are listed below:

• Elevated Operating Ambient — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

• Reduced Air Flow — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. Do not block vents.

• Mechanical Loading — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

• Circuit Overloading — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

• Reliable earthing — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).

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Lithium Battery Replacement

If a battery is supplied in this Avid product it *must* only be replaced by qualified personnel. Contact Avid Customer Support for assistance.

WARNING

Danger of explosion if battery is incorrectly replaced. Replace with only the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

ADVARSEL!

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

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Overview

The ML530 Mic-Line Interface is a 24-channel, digitally controlled analog preamplifier. The ML530 is controlled by the SC253i Interface Pilot, which is controlled from the System 5 console surface. The ML530 is packaged in a 2RU enclosure.

Features

The ML530 provides gain over a range of -12 to +72 dB in 0.5 dB increments for each channel. The ML530 also features a high-pass filter, HiZ/LowZ switch, and phantom power.

Front panel LEDs provide status information for all features so the operator can quickly view the status of each input channel. Red front panel LEDs indicate signal clipping, mute, impedance, and phantom power activation. Green LEDs indicate signal presence, activation of the high-pass filter, and pad attenuator.

Redundant power is supported by purchasing an additional power module (Euphonix part number: 964-06692-01).

Applications

Used in conjunction with the Euphonix AM713 analog to MADI converter, the ML530 provides multiple variable gain inputs for the System 5 or Max Air. Additional ML530s can be added if more than 24 channels of variable gain inputs are desired.

Front Panel

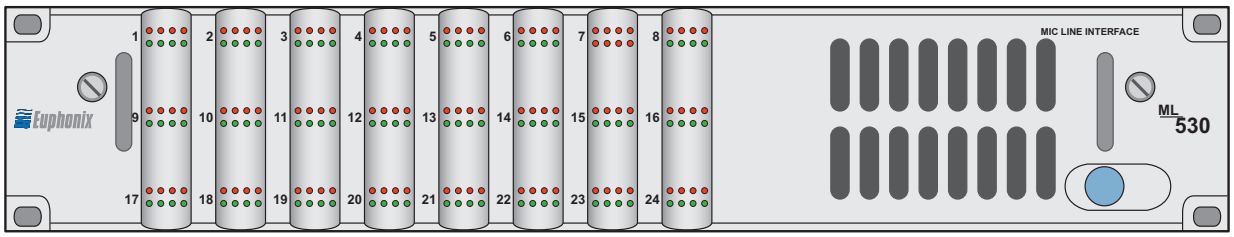


Figure 1 ML530 Front Panel

Power Switch: The power switch, on the lower right, turns the unit on/off.

Status LEDs: Eight LEDs provide status information for each of the 24 channels:

- **Clip:** Signal clipping (red)
- **Mute:** Channel muted (red)
- **HiZ:** High impedance (red)
- **48V**: Phantom power (red)
- **Sig**: signal present (green)
- **HPF**: High-pass filter (green)
- **Phase**: Phase invert (green)
- **Pad**: 12 dB attenuation (green)

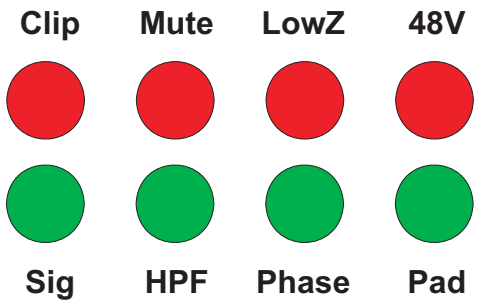


Figure 2 Front Panel Channel Status LEDs

Since the ML530 is digitally controlled via software, the power switch is the only front panel control.

Rear Panel

Figure 3 ML530 Rear Panel

Inputs (38-pin Elco): 24 inputs are provided on two 38-pin ELCO connectors. The level of all signals input at these ports can be boosted or attenuated. In standard configuration, the input cable is configured by customer. Elco connectors and pins are provided. See *Elco 38 Input/Output Pinout* on page 17.

Outputs (38-pin Elco): 24 outputs are provided on two 38-pin Elco connectors. The supplied output cables fan out to two sets of 12 male XLRs for connection to the AM713 Analog to MADI converter. See *Elco 38 Input/Output Pinout* on page 17.

Control (DB-15): Input for digital control signal from PC253i Digital Pilot. Signal format is Euphonix TCC bi-directional serial protocol. All switching and gain controls are communicated via this connector.

AC Line In (IEC) and **Fuse Tray**: The power connector accepts standard IEC power cords. 90–250 VAC 110, 220, or 240 VAC, 50/60 Hz can be applied at this connector.

Specifications

Table 1 Performance Specifications

Gain Range	-12 dB to 72 dB in 0.5 dB increments
Phantom Power	+48 V ±2% (Switched per channel)
Maximum Input Level	41 dB (Pad inserted, unity gain, @1 kHz, @1% THD+N)
Differential Input Impedance	200 kΩ (Hi Z, Pad off, +48V off) 200 kΩ (Hi Z, Pad on, +48V off) 12.7 kΩ (Hi Z, Pad on, +48V on) 12.7 kΩ (Hi Z, Pad off, +48V on) 1.5 kΩ (Lo Z, Pad off, +48V off) 1.5 kΩ (Lo Z, Pad on, +48V off) 1.4 kΩ (Lo Z, Pad on, +48V on) 1.4 kΩ (Lo Z, Pad off, +48V on)
Maximum Output Level	29 dB (@1 kHz, @1% THD+N)
Output Impedance	100 Ω
Frequency Response	10 Hz – 60 kHz (-0.5 dB @ unity gain) 10 Hz – 50 kHz (-0.5 dB @ 30 dB gain) 10 Hz – 40 kHz (-0.5 dB @ 66 dB gain)
Gain Accuracy	±0.15 dB (@1 kHz)
Distortion (THD+N)	0.004% (@ 1 kHz @ 0 dB gain with +13.5 dB applied, 22 kHz filtered) < 0.02% (20 Hz – 20 kHz @ 13.5 dB 80 kHz filtered)
Equivalent Input Noise (EIN)	-127 dB (@66 dB gain, 22 Hz – 22 kHz filtered, Low Z mode, 150 Ω source)
Common Mode Rejection (CMR)	>50 dB (10 Hz – 20 kHz)
Phase Linearity	±10° (25 Hz – 20 kHz)
High-pass Filter	80 Hz 18 dB/octave switched per channel
Phase Invert	180° switched per channel

Table 2 Environmental and Power Specifications

Operating Temperature	5–35°C
Power Requirements	100–240 VAC, 50/60Hz
Power Consumption	1 A

Table 3 ML530 Physical Dimensions

Height	3.5 inches
Width	19 inches
Depth	18.6 inches
Weight	17 lb

NOTE: *Leave about six inches behind the ML530 for cable connections.*

User Reference

Standard Configuration

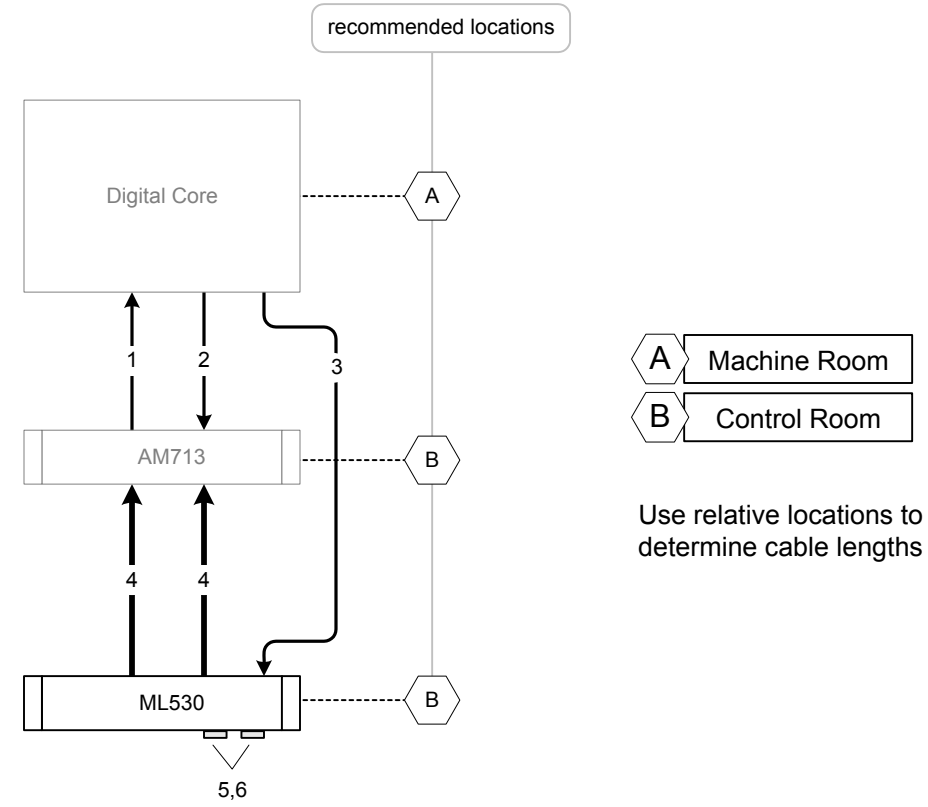


Figure 4 ML530 Standard Cable Diagram

The standard lengths specified in Table 4 and Table 5 are supplied so the mic-line interface can be located in the control room. Custom lengths are available and cable kits must be ordered separately.

Table 4 ML530 Standard Cable Specification

Cable	Qty	Description	10M Part #	20M Part#	Length
		Accessory cable kits by special order	936-07083-01	936-07155-01	
1	1	**MADI Output**: RG59 75 Ω coax	032-07230-00	032-07306-00	
2	1	**AES/EBU Sync**: one male XLR <> one female XLR	030-07085-01	030-07153-01	
3	1	TCC Control from 253i Interface Pilot	030-06983-01	030-06985-01	
4	2	**ML530 Analog Out** one Elco 38 <> twelve male XLR	030-7108-01		.5 m
5	2	Elco 38-Pin Connector w/hood	100-02099-00		NA
6	80	Elco Crimp Pins	100-02100-00		NA

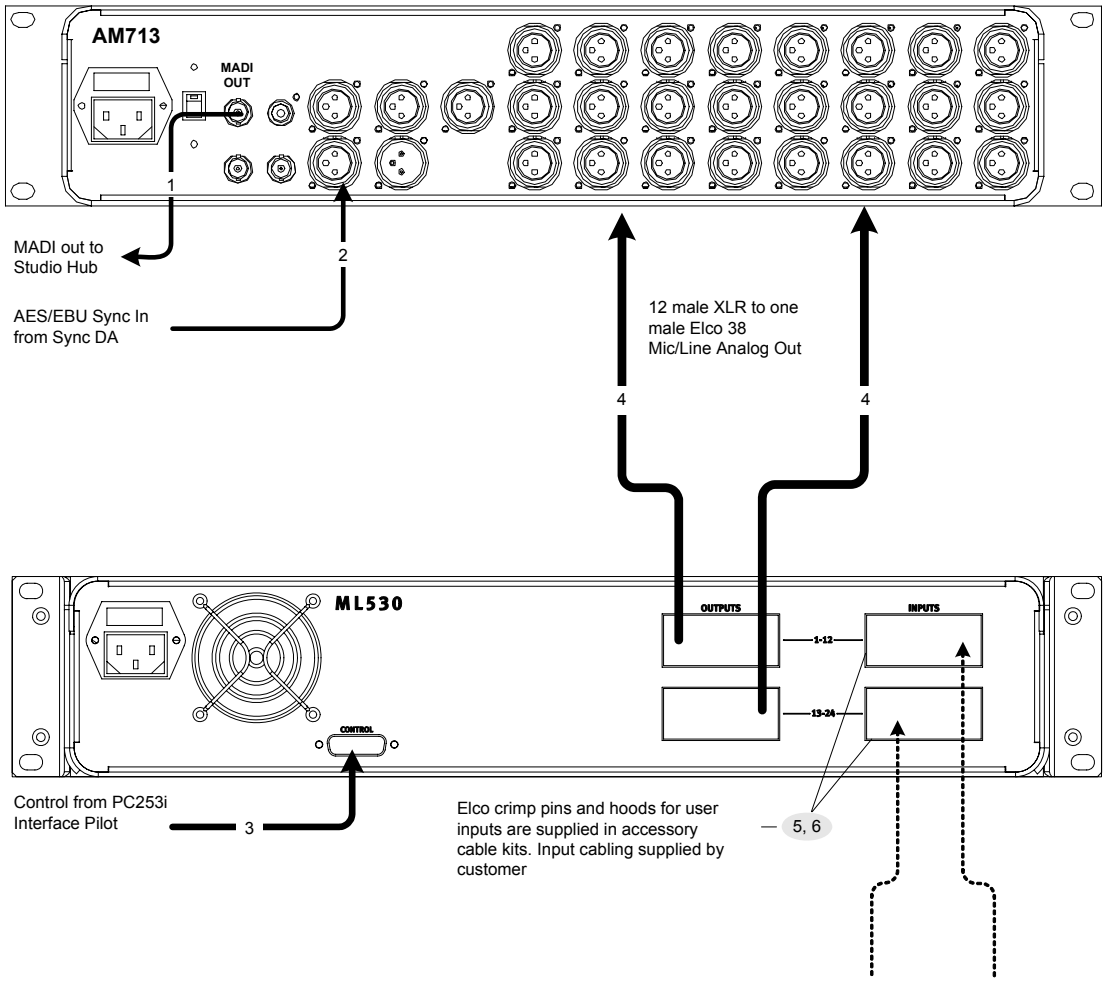


Figure 5 ML530 Standard Configuration

Optional Input Patch

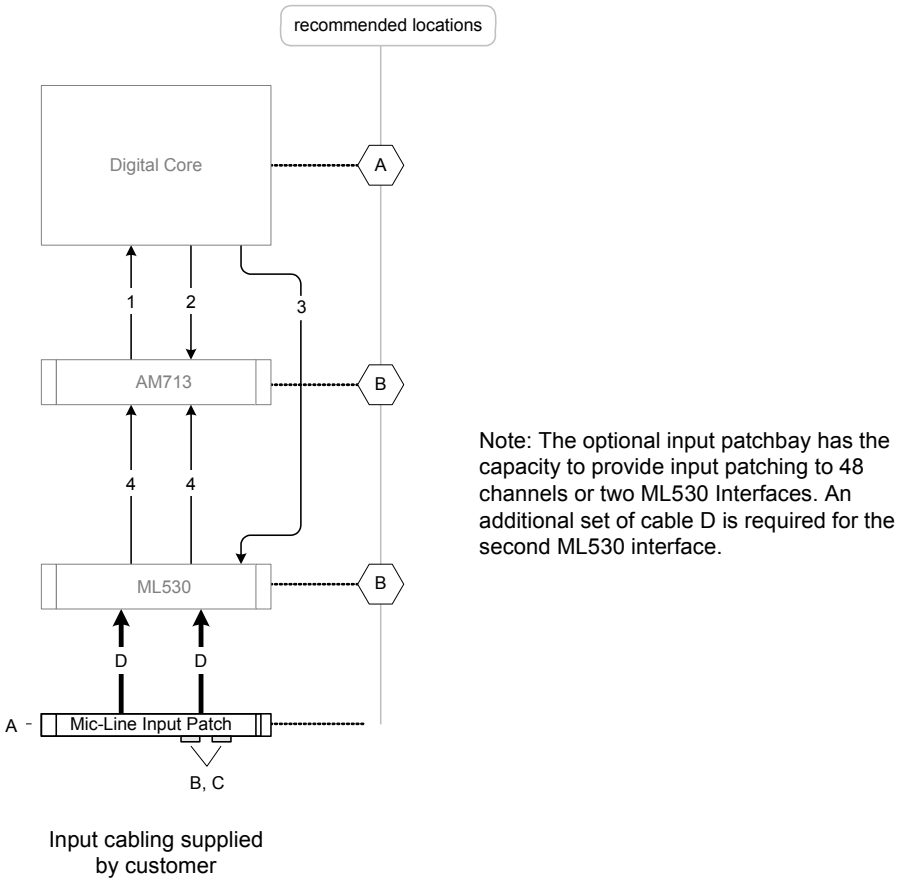


Figure 6 Input Patch Cable Diagram

NOTE: *Patchbay, cables, pins and connectors are ordered separately as required.*

Table 5 Input Patch Cable Specifications

Part	Qty	Description	Part #	Length
A	1	Tie Line Patch	950-03770-01	NA
B*	2	Elco 38-Pin Connector w/hood	100-02099-00	NA
C*	80	Elco Crimp Pins	100-02100-00	NA
D**	2	**ML530 Analog Out** one male Elco 38 <> one male Elco 38	030-07158-01	2 m

*Elco hoods and crimp pins are included in standard 10M and 20M accessory cable kits.

**10M cable available, one male Elco 38 <> one male Elco 38, part# 030-06913-01

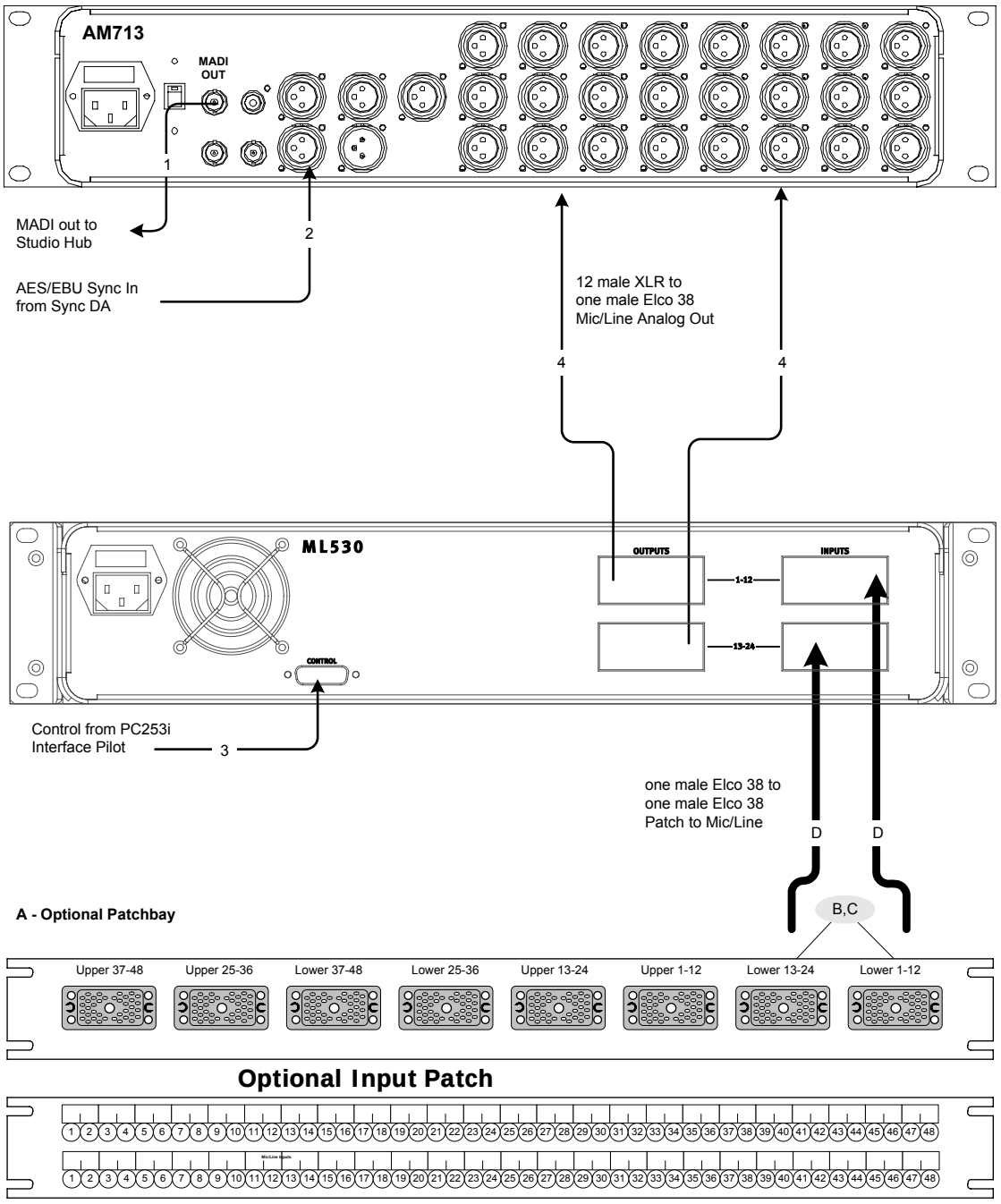
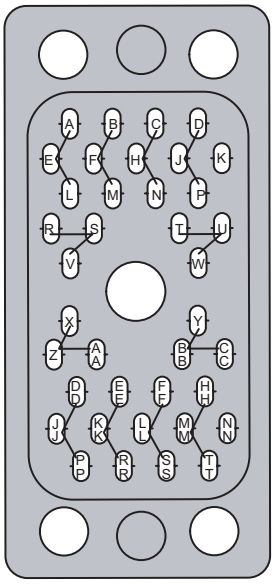


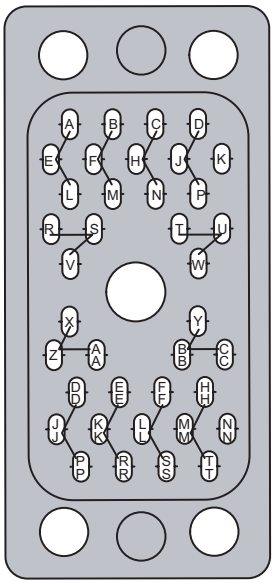
Figure 7 Input Patch Configuration

Elco 38 Input/Output Pinout



Num	Signal	Wiring Instruction & Description	+	-	G
1	Mic In 1 / Mic In 13	From studio Mic 1 / 13	A	E	L
2	Mic In 2 / Mic In 14	From studio Mic 2 / 14	B	F	M
3	Mic In 3 / Mic In 15	From studio Mic 3 / 15	C	H	N
4	Mic In 4 / Mic In 16	From studio Mic 4 / 16	D	J	P
5	Mic In 5 / Mic In 17	From studio Mic 5 / 17	DD	JJ	PP
6	Mic In 6 / Mic In 18	From studio Mic 6 / 18	EE	KK	RR
7	Mic In 7 / Mic In 19	From studio Mic 7 / 19	FF	LL	SS
8	Mic In 8 / Mic In 20	From studio Mic 8 / 20	HH	MM	TT
9	Mic In 9 / Mic In 21	From studio Mic 9 / 21	R	S	V
10	Mic In 10 / Mic In 22	From studio Mic 10 / 22	T	U	W
11	Mic In 11 / Mic In 23	From studio Mic 11 / 23	X	Z	AA
12	Mic In 12 / Mic In 24	From studio Mic 12 / 24	Y	BB	CC

Figure 5-1 ML530 In 1/In 2 Pinout: Elco 38 Socket



Num	Signal	Wiring Instruction & Description	+	-	G
1	Mic Pre Out 1 / Out 13	To AM713 Analog In 1 / In 13	A	E	L
2	Mic Pre Out 2 / Out 14	To AM713 Analog In 2 / In 14	B	F	M
3	Mic Pre Out 3 / Out 15	To AM713 Analog In 3 / In 15	C	H	N
4	Mic Pre Out 4 / Out 16	To AM713 Analog In 4 / In 16	D	J	P
5	Mic Pre Out 5 / Out 17	To AM713 Analog In 5 / In 17	DD	JJ	PP
6	Mic Pre Out 6 / Out 18	To AM713 Analog In 6 / In 18	EE	KK	RR
7	Mic Pre Out 7 / Out 19	To AM713 Analog In 7 / In 19	FF	LL	SS
8	Mic Pre Out 8 / Out 20	To AM713 Analog In 8 / In 20	HH	MM	TT
9	Mic Pre Out 9 / Out 21	To AM713 Analog In 9 / In 21	R	S	V
10	Mic Pre Out 10 / Out 22	To AM713 Analog In 10 / In 22	T	U	W
11	Mic Pre Out 11 / Out 23	To AM713 Analog In 11 / In 23	X	Z	AA
12	Mic Pre Out 12 / Out 24	To AM713 Analog In 12 / In 24	Y	BB	CC

Figure 5-2 ML530 Out 1/Out 2 Pinout: Elco 38 Socket

Connector Specifications

38-pin male w/ hood Elco P/N 00-8016-038000-519 (Euphonix P/N 100-02099)

Use crimp pins Elco P/N 60-8017-031300-339 (Euphonix P/N 100-02100)